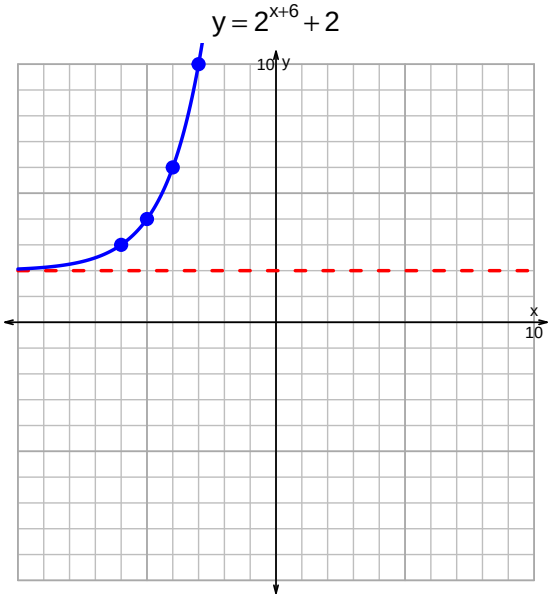
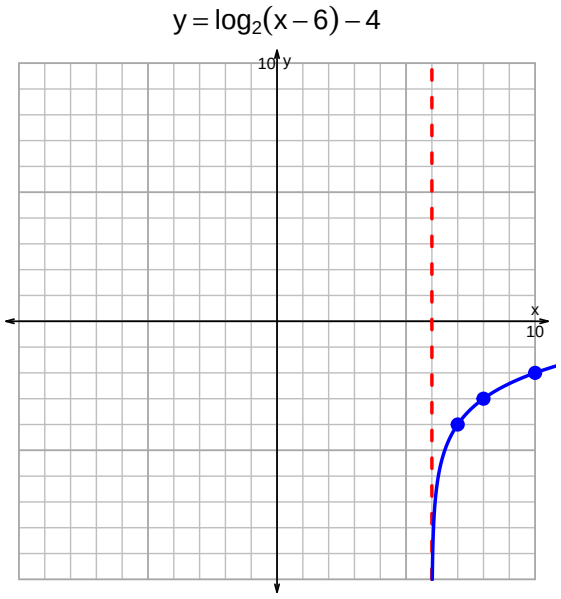
Name: Date:

s18: EXP LOG (Practice v1)

1. (10 pts) Graph $y = 2^{x+6} + 2$ and $y = \log_2(x - 6) - 4$ on the grids below. Also, draw any asymptotes with dashed lines.





Somewhat useful hint: $2^3 = 8$, *and thus* $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-13 = \left(\frac{-5}{4}\right) \cdot 10^{-7t/3}$$

Divide both sides by $\frac{-5}{4}$.

$$\frac{13 \cdot 4}{5} = 10^{-7t/3}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{13 \cdot 4}{5}\right) = \frac{-7t}{3}$$

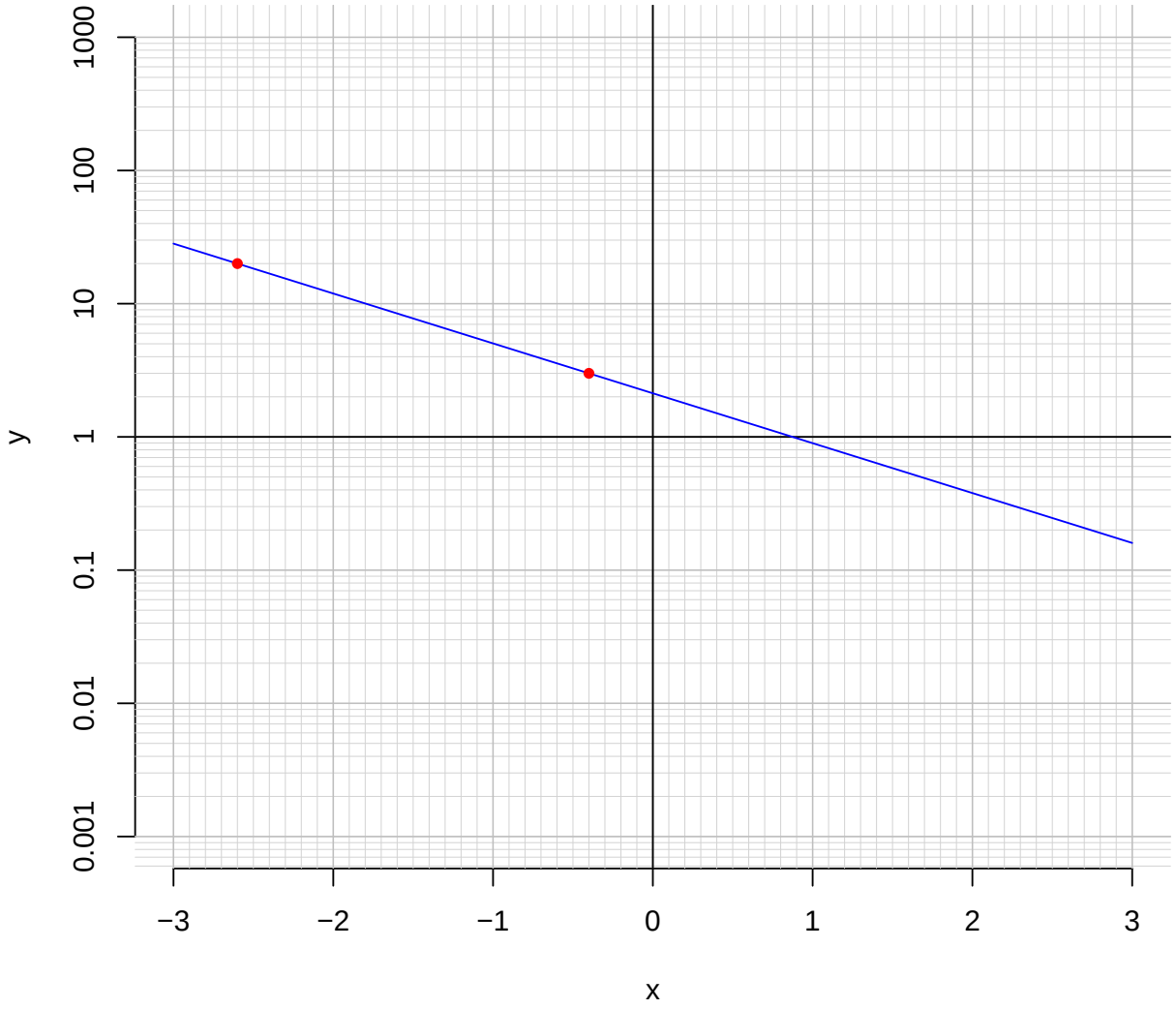
Divide both sides by $\frac{-7}{3}$.

$$\frac{-3}{7} \cdot \log_{10}\left(\frac{13 \cdot 4}{5}\right) = t$$

Switch sides.

$$t = \frac{-3}{7} \cdot \log_{10}\left(\frac{13 \cdot 4}{5}\right)$$

3. (10 pts) An exponential function $f(x) = 2.12 \cdot e^{-0.862x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.4)$.

$$f(-0.4) = 3$$

b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{0.862} \cdot \ln\left(\frac{x}{2.12}\right)$$

Using the plot above, evaluate $f^{-1}(20)$.

$$f^{-1}(20) = -2.6$$